MEDICAL SOCIETY OF LONDON
Established 1773
11, CHANDOS St. CAVENDISH Sq. W.

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SOME OF THE
FIRST GENERAL LAWS
OR
FUNDAMENTAL DOCTRINES
OF
MEDICINE AND SURGERY.

ADDRESSED TO
STUDENTS AND JUNIOR PRACTITIONERS.

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PREFACE.

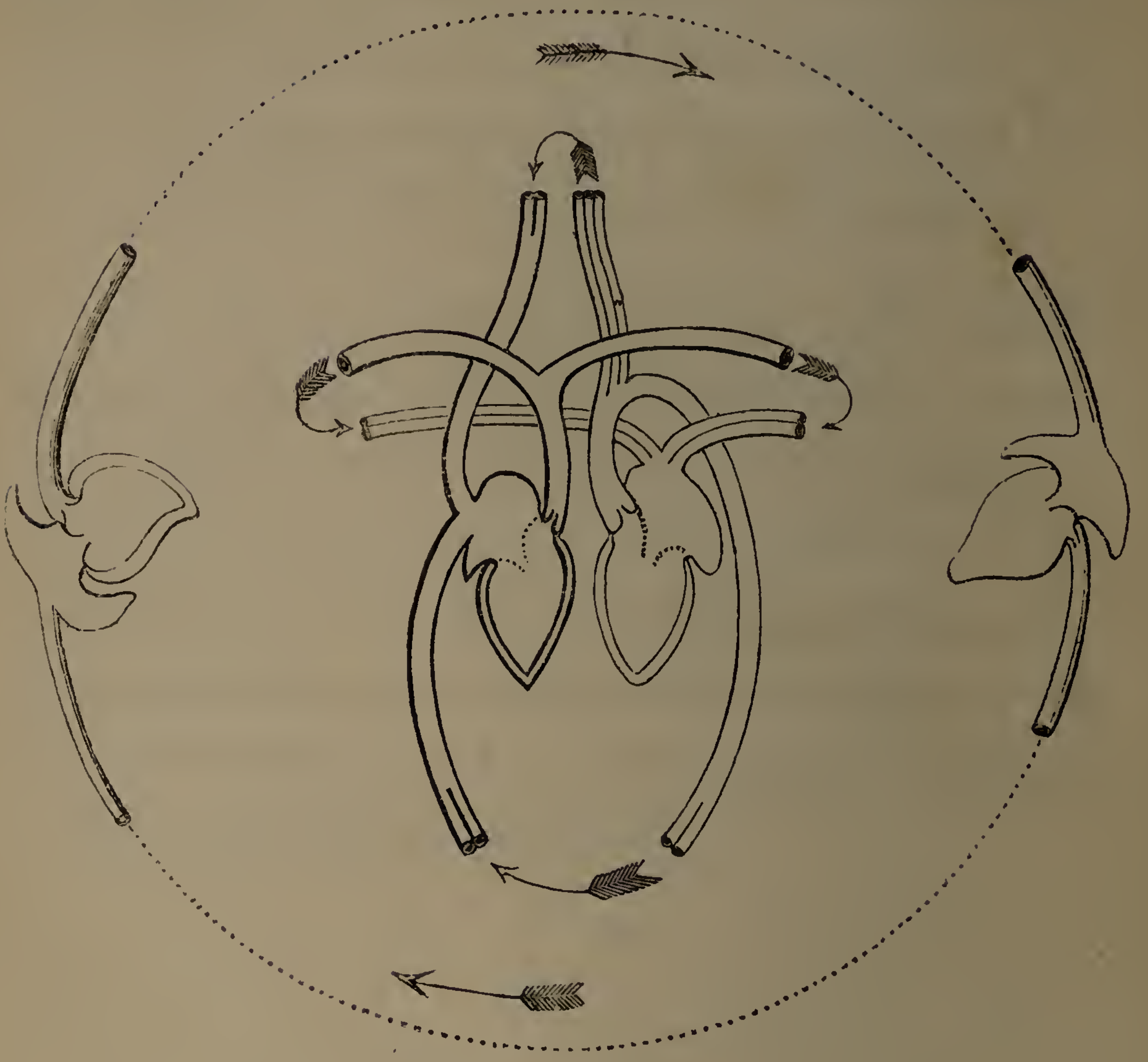
The following opinions are but rudely stated, yet should they prove intelligible and just, they must, I think, be regarded truly as essential parts of legitimate or rational medicine.

The only extenuation I can offer for faultiness of style or arrangement must be the simple account of my habit of study. These reflections have been more or less before me, and variously weighed for years; but whenever any one has seemed to find its due place and force (comparatively and for the time), my disinclination to alter or adorn it has been equal to my desire to pass on to some adjacent consideration; and I have pursued these things as much from taste as from necessity or for approbation.

These views may, I hope, be allowed to stand as complete in themselves; they are only concluded where laws of more limited extent seem to commence. The more extensive of the rules of therapeutics are here pretty plainly indicated, but none of them have appeared to me to be comparable in scope with the few physiological and pathological laws which I have endeavoured to explain.

The merit of originality is perhaps never rightly estimated, and the praise of it is little worth seeking. There may be abundant authority for the statements, and even example for the plan here pursued. I do not know, however, where they are to be found; and yet I can almost hope that some may follow these opinions to the end without dissent, for I am not conscious of wandering far from a clear and practicable track.

Pulmonary Circulation.



The above plans of the circulation are introduced only as notes; in which form also, and with reference to these diagrams, an additional illustration will be found to most of the positions successively maintained in these pages. These may be said to explain physical states; the majority of the examples in the text are connected with humoral changes; but it will be seen that the vital and nervous doctrines are not discarded.

OF SOME

GENERAL LAWS, &c.

It cannot be doubted that the present merits of medical science are very considerable. The shame of our profession is, however, that but a few of its members are well instructed; whilst a still more lasting evil, I fear, depends on the fact that too many of our authors and teachers are one-sided and prejudiced in their views. It can scarcely be an error to impute diseases in some way to the nervous system, or the vascular; to the stomach, the liver, the ileum, or the colon; to the humours, or the solids; to malaria, contagion, or cold; and yet how *justly* do the especial advocates of any one of the doctrines here referred to despise the mass of opposite teachers. The same kind and degree of blame attaches to all the exclusive disciples of experience, of reason, of literature, of observation, of experiment, of statistics, and the like. Is it not possible fairly to respect that which is good in all? Surely it is not only the young who may hope to avoid the errors of partiality.

I am well assured of my incompetence to *complete* the task before me, but I invite the reader the more earnestly to devote himself to a patient and unprejudiced survey of true medicine, and I have some hope that these pages may assist him.

The elements or rudimentary sciences of our profession sometimes form a very lengthened catalogue. The first essential seems to be a knowledge of the materials of the body, and their arrangements and uses. The second indispensable attainment is an acquaintance with the rise, progress, and termination of morbid actions. The next all-important knowledge is that of remedial agents. The rational principles or laws of medical science must be formed from these combined elements, based upon these rudiments.

The course, however, which I deem most natural and satisfactory to the learner is this: To learn together the form, uses, and disorders of any one part, and of others in succession. If any should object to this plan, my reply would be, let the learner try it, and, unless oppressed by needless impediments, I feel confident he will experience interest, and facility, and success, which the routine of school discipline is too much devoid of.*

This however *is* the plan of the schools, although the pupil does not generally commence it until he is about to leave,—and perhaps he never does. But, whether in the wide survey, or in the detailed study, it must ever happen that available medical knowledge is attained in this way, for it is then anatomy leads to physiology, which is partly physical, partly chemical and electrical, and in part also metaphysical. The outward signs of health are here involved, and with them we have to consider all external influences, and then the first disturbances of health with their various results. The outward evidences of these last during life enforce attention, and after death the morbid anatomy of the interior assists the explanation.

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* How satisfactory would it be at once to be introduced to the structure of the valve between the cavities of the left heart, a dissected series, and one living example of its disorders! Or, for a first lesson, to examine the wind-pipe along with instances of its diseases!

Finally, the mature knowledge of the means of relieving disorders follows out of the knowledge of the functions in health and disease, and the consideration of them in dependence on every external agency, whether morbific or sanative. Is it not in the highest degree plain and satisfactory amongst the laws of remedies, that morbid disturbing causes are to be obviated; and that over-acting parts are not to be excited, but the contrary;—that their excess of stimulus is to be removed, and that the inert or the natural may be stimulated in order to relieve them? And again, that natural processes must be left unembarrassed? What is there more than this in medicine? What can render these views clear, but a sound physiology and pathology?

The fundamental principle—the initiatory law (so to speak) of medicine—declares the truths or involves the facts:

1st, That health consists in a certain natural state, and moderated action of the several parts of the animal frame;

2d, That disease forms a perceptible departure from the healthful state; and

3d, That remedies have a power of modifying the disturbance or assisting the restoration.

SECTION A.

First, we may proceed to reflect a little more at length on the first proposition, *that which relates to health.*

A certain gentleness and regularity of the animal functions are the characters of health; and, for the sake of a theoretical illustration, we may venture to admit the idea of a perfect equiponderance of the whole at a given time. We may suppose that at a certain period the digestive, circulatory, secerning, locomotive, sensitive, and reflecting organs may be observed carrying on their functions with a pretty equable activity. We must remember, however, that the operations are incessantly susceptible of marked and varying *oscillations,*—degrees of exaltation and depression, and even, perhaps, of temporary suspension within the limits of the healthful state. The theory of the natural balance of the animal functions would of course appear most unsatisfactory without a proper attention to the principle of fluctuation, and especially when referring to those almost supplementary actions which seem to be developed at distant intervals, as, for example, the generative. And further, the theory requires that we should pointedly include the idea of *compensatory actions;* that we should indeed be well aware, that the oscillation of some one function towards its extreme of natural activity will be continually found supplying the place of another function, which is fluctuating in an opposite direction;

and that the healthy preponderance of one action in the system will frequently demand a correlative activity in others, and at another time require the compensating decline of some functions.*

The explanation of a compensating office seems indispensable when a great function declines, suddenly perhaps, and another is consequently excited and supplies its place; as the secretion of milk on the contraction of the uterus, which is remarkable in this, that a fresh outlet is established for the mother, and a different nourishment for the infant. Again, when under circumstances of external cold the cutaneous functions are diminished or suppressed, the activity of internal organs is moderately accelerated, or, vice versâ, the copious secretions of the surface lead to diminished eliminations from within. These effects appear for the most part salutary, and often necessary.

It must be perfectly evident that some conditions of the system naturally call for great and others for slighter exertions of counterpoising parts; and thus we find a necessity established for very free limits to the salutary oscillations of functions. An abundance of fluid being poured into the stomach and vascular apparatus, is plainly connected with the want of a free circulation and more abundant excretory actions, as by the kidneys. In like manner the want of food, or delay in the digestive operations, both demands and induces a very material retardation in the circulatory and secretory actions; and thus a confined diet is, to a certain extent, compensated for by more gradual secerning processes, as well as probably by a more complete digestion. The excessive diet of some persons is a sufficient comment upon the powers by which compensatory action or a salutary balance of the functions is maintained; but I have been led to regard as most striking those instances in which an organ, or a function, is occasionally wanting, whether by primitive deficiency, suspended development, or removal, as where a kidney* is deficient, or a testis, or the thyroid gland (an assimilative organ), or as in the amenorrhœa emansionis, or in cases of defective limbs.

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* Thus, with reference to the diagrams: 1st. The circulation may be easy and uniform, or excited, and still equal. 2dly. Oscillations may arise in any part, and the compensating states be set up consecutively. The pulmonary circulation being impeded, accumulation takes place towards the right heart. A freer respiration relieves this. So repletion in the right heart induces full aeration, and then gradually the left heart and general circulation participate in the exalted activity.

Periodic functions. With respect to those functions which seem to be repeated after greater or less intervals, and which may almost be regarded as occasional or periodical, I am disposed to make but little distinction. Alternations of rest and action seem to belong to all the animal organs. The actions of the heart and capillary vessels are not perceptibly different in this respect. And although the functions are affected by seasons of the year, the periods of the day, the successions of meals, the processes of the mind, and the motions of the will, there is evidence enough that a certain equipoise of the functions is the character of health, and that the sanatory fluctuation is at once a natural result of external agency and mutual correspondence, and a providential resource to obviate more sudden or serious disturbances; in truth, it is an act of compensation. These principles will be further developed, and their application elucidated by the consideration of diseases of particular organs.

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* An absent kidney is scarcely uncommon, and I have seen several instances, or rather I have found the little cellular rudiment of a kidney with a pelvis, but imperforate ureter. In these cases the opposite organ has not appeared to me very large or coarse in texture, and more than once the intestinal follicles were seen most peculiarly hypertrophied and elongated. Excepting in the instance of one child, I have only found the single kidney in adults.

The oscillations of the functions and their mutual acts of compensation, duly considered, only serve to explain more fully what may be called theoretically the balance of health; and they may be employed to illustrate the commencement of disease. These natural fluctuations again are continually made available, during the progress of diseases, to obtain a compensatory action, on the part of a healthy organ, which becomes opposed to the too great or too little activity of that which is diseased; as, for example, when one kidney is hastily obstructed, the other becomes hypertrophic. The remedial bearing of these rules is obvious; but we must defer the consideration of this part of the subject.

We have remarked upon the balance of health, the natural fluctuations and mutual compensations of the functions, and have introduced partial examples, which, it will be observed, are drawn almost exclusively from the humoral changes produced in the body; but instances might have been found in abundance among the other actions, had not the first named seemed most applicable to the subject before us. All organs, by exercise, obtain an increased circulation and nutrition, and consequently (and in this way) effect a greater consumption or deterioration of the materials circulated, so that the humoral changes depend on all the organs of the body, though in different degrees. The influence of the nervous system, in this respect, is probably not great, whilst in other points of view its functions are numerous and varied, and their correlation (with each other and with every other) is of the greatest importance, whether we regard them as an isolated series or in connexion with the offices of other parts. When we consider that all parts supplied with nerves must be the sources of sensation, or the subjects of a stimulus arising in a contrary direction (and perhaps both),—when we regard the influence of the senses and other functions on the mind, and the affections of many functions produced by the mind,—we must admit some notion of a natural mean appropriated (in health) to all these mutually dependent parts. We can perceive something of their necessary fluctuation and compensating influences; and we may understand how it is that an excessive oscillation, whether of decline or acceleration, amounts to disease.

We may hereafter find it neither tedious nor difficult to exemplify the mutual dependence of the whole animal functions. In an appropriate place, in relation to individual diseases, it will be highly serviceable to trace, side by side with selected facts, these fluctuations of action in continued though varied degrees of correspondence. For instance, in a plethoric disorder we should have to examine the forces of the circulation and cerebral system as affecting each other, and as dependent on digestion, and then to observe the individual or combined influence of all these upon the muscular system, or on the excretory functions: perhaps to find the free exercise of the locomotive apparatus giving rise to a copious elimination from the blood of that urea, the nitrogen of which prevails so abundantly in muscular fibre, and most surely of many other matters. Our immediate object precludes such a digression; but it may be observed that the elucidation of a theoretical principle does not require this of us. It is only necessary to remember that when distinct facts establish a view, a more general observation may restrict, but cannot repudiate it, may assist to extend and define, but cannot abolish it. These observations seem indispensable, especially for those who are already biassed to a single set of opinions. Every doctrine must stand or fall by itself. Doctrines which are erroneous must clash. Those which are just will fairly coincide, and those which are growing rightly will illustrate and corroborate each other.

SECTION B.

We may next take up the consideration of the second proposition of our fundamental principle, *which relates to disease.*

When the activity or indolence of an organ passes beyond the salutary bounds already adverted to, this is disease; and we find that unless its functions return speedily to their due proportions, a manifest disturbance arises in other functions, in order, as we may suppose, to adjust the balance of actions, or make a certain approach to that balance, without which the functions successively fail and life ceases. Thus we have arrived at a definition of disease—a definition which is indeed general, but which is equally applicable to every kind of morbid process, and one which seems particularly available for the objects of our present procedure. We may justly determine that, when an organ is excited or impeded in the exercise of its offices beyond the natural degree, it is in a state of disease although such may at first be actually imperceptible. It is for the most part, however, the effect of one or more deranged functions on the system at large, which is so apparent to us and which we agree to call disease.

It is scarcely perhaps necessary to observe that the primary object of study is disordered function, whether in connexion with or independent of perceptible disorganizations. We may avail ourselves of all discoverable morbid appearances in actions, products, or tissues, in order to derive a clear apprehension of a disorder, its nature, degree, and correlative influence; and this will ensure a right perception of disordered functions, but it must be always indispensable carefully to distinguish between a settled disorganization and a progressing disease. There is no mere refinement of reason in this view: it is only valuable so far as it is practicable, as we may see hereafter. The difference between an incipient ulcer of the cornea and an old opacity is of the same kind as that between a recent changeable stricture and one which is old and permanent.

From the first fundamental law already explained, as involving the *healthy balance, disturbed* yet *amenable,* more or less, to remedies; and after a general definition of disease, we come to observe that the disturbance may commence in almost any part, and that it may continue very partial. Thus we obtain a division or series of disorders, whether acute or chronic, common or specific, of the least complex kind.

Local disturbance then, disorder or disease, seems to me to express quite naturally a second law (in our Second proposition). Patience will, I think, find nothing to precede, and everything appears rationally to follow this arrangement. Watching the rise, studying the causes, and attending the progress of simple derangements (and the more simple the better), will be found in the foremost degree profitable.

The existence of complex or combined diseases will require no proof. As we saw the efforts of health to maintain an equiponderance of the functions, and found the compensatory actions liable to become inefficient, so we shall find, that when one function fails by disease, others are likely to become oppressed and overwhelmed, and even many in succession, until the disturbance, if not fatal, becomes general: for beyond the investigation of the complex or combined local affections we shall have to study the most general disturbances of the functions whether fatal or not. *Complex diseases* will express an ulterior law, and again *general diseases* another. These divisions of diseases are peculiarly adapted for observation and far from being unnatural, although individual cases will only afford us partial illustrations of the main series.*

Complicated and *general diseases* should come next to be examined, but we must first consider the local a little more at length.

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* When a poor regimen induces weakness and dilatation of the left heart, we have a comparatively simple disease; but with a consequent accumulation in the pulmonary circulation and defect in the general, we see examples of increasing complexity.

Where the general circulation terminates in the right heart, a tumour of very simple structure may gradually produce obstruction, the aeration of blood and its general transmission slowly decline, and thus finally some vital organ is overturned.

PLANS OF THE ANIMAL FUNCTIONS,

Between all and every two of which some sort of equiponderance is necessary.

NERVOUS FUNCTIONS, MOTION, &c.

ASSIMILATION. NUTRITIONS. EXCRETIONS.

CIRCULATIONS.

INGESTA.
Food,
Fluids,
Air, &c.

For the growth and nutrition of
Bone,
Joints,
Muscles,
Nerves, &c.
Parenchyma,
Membrane,
Tubes, &c.

Producing deterioration and loss, requiring renewal and elimination. Effects increased by exercise or use, and vice versâ.

EGESTA. By skin, mucous membranes, lungs, liver, pancreas, kidneys, genital organs, &c.

CIRCULATORY BALANCE.

The Blood.

Absorbent system—the glands and other organs of perfective assimilation: thymus, thyroid, spleen, liver, &c.

Veins and the right heart.
Left heart and arteries.
Pulmonary and general capillaries.

BALANCE OF THE NERVOUS CIRCULATION.

Perception. Reaction.

Voluntary, and involuntary systems, communicating

Organs of sense,
Nerves of conduction,
Centres of appreciation or sense,
Nerves of volition,
Organs of motion, &c.

Local disease may commence in any one function of the body.

In the summer of 1839, I made the acquaintance of Dr. Jennings, senior, a Professor of Medicine in Baltimore, and had the advantage of an exposition from him, which, if I did not fully admit, I did not fail to regard with great interest. This was a view of general pathology, in relation to the nervous system, and as the Doctor was well informed, and both keen and energetic, my impression was, that the hypothesis must often have served him most happily in practice. I certainly think the account deserving of general attention, yet I shall make no pretension to accuracy in the relation (from memory), or in defining its value.

The first thing assumed was a given and appropriate quantity of the matter of innervation (nervous fluid or the like), circulating naturally in various parts of the system; and in health pretty equally distributed, but liable, with disease, to perversion or irregular determination.

A great degree of importance was attached to the accumulation of the *fluid*, and to its subsequent local overflow (if I may so express it), as when a person is said to take cold, and the disorder terminates in a catarrh. Fevers were regarded as the effects also of undue accumulations of innervation, and phlegmasiæ as the localization of the wandering fire, (if I am not mistaken.)

Much stress was laid upon the apparent fact, that the weakest part is most obnoxious to the inundation. Metastasis was thought to depend on the accidental or medical repulsion, and a fresh localization (as of necessity); and relapses were imputed to still retained accumulations, or renewed causes of retention. The

Doctor pointedly referred all ague to alternations of temperature, or rather he excluded the idea of miasm.

The practical inferences from the preceding view were characterized by promptitude and rather severe efficiency, which seemed to me to demand all the sagacity and experience of one like Dr. Jennings to render them safe.

Venesection was esteemed a definite power to lessen the excessive matter of innervation. Counter-irritants were valued, according to their names, as derivatives, and all evacuants as partaking of the two preceding agencies.

The simplicity of the Doctor's view, which he took some hours to illustrate, its correspondence to other (different) views which I had long entertained, and the fact that I was in manner sensible of the want of good general views of the pathology of the nervous system,—all concurred to make me listen to the exposition with much pleasure.

I have already shown the propriety of looking to all parts of the frame; and it need not be said how easy it is to carry a theory too far. I do not recommend single views; and my opinion of the present will be best gathered from my account of others. With questions of originality, I have nothing to do. The foregoing cannot pretend to be even a sketch, but it may point to the nervous balance as fully worthy of consideration.

In the preceding plan every simple disease will find its place, and I desire particularly to give the preference to no one series. The student will place that foremost which he first understands, but let him beware of studying any sets exclusively! It is needless to select any exemplification, and it might seem inconsistent.* Avoiding this partiality, then, I pass on to a third law, the most valuable perhaps in the history of diseases, and second to none in the study of remedies.

Thirdly. *The course of disease is definite,* and precisely proportioned to the cause, that is, with proper regard to the state of the individual affected—his particular constitution and susceptibilities. Hence all diseases have their proper names and characters (diagnosis and prognosis). Some may be casually combined, one may subside and another arise, but they are never converted. Each one follows its own course. An incision, a bruise, a fever, an inflammation, a strumous or malignant action, poisoning, or lightning, never fails in its proper phenomena, although the consequences of each must vary in degree and duration, according to the severity of the cause, the parts affected, the reparative efforts, the remedies applied, or the disturbances that may be interposed.

There is a state of disease which I do not know whether to define as health or disorganization; it is in some senses tantamount to both; I mean that unnatural state of activity or indolence of an organ (as the skin) which, by an extreme (healthy?) effort on the part of other organs, is mainly compensated for, even permanently, without material disturbance of the body generally. Such things almost belong to increasing years, but they are just equal to the loss of one horse from a team: the rest may do the work with greater exhaustion, but besides this they could not be equal to a certain amount of difficulty, which the whole entire might have overcome.

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* The reader may, without reference to the diagrams, consider the effect of impediment in any one point of the circulation; as the transient fulness of the right heart, by the influence of muscles on the general circulation, or the sudden difficulties of a ruptured valve in the artery distributing the blood from the left heart.

But the most interesting and available part of this law consists in this, Fourthly, *That there is in most diseases* (if not in all) *a positive tendency to decline,* as it were, an active effort to subside, supposing the morbid excitement removed.

The onset of a fever, as the falling of a mountain, may be fatal at once; and the course of a fever or starvation seems at first without palliation, but the actions of every moment are mingled with efforts tending to restore the healthful balance. And do not the relapses of fevers and inflammations, and of numerous slow, protracted disorders testify abundant efforts towards restoration?

What I have already advanced relative to the condition of health, its correlative functions, fluctuating, compensatory, and balancing operations should render this statement plain and conclusive. The modes or means by which the subsidence is brought about are too intricate and various to explain here; such as the following will, however, not be denied. In a common hemorrhage, the functions almost fail, and with them the forces of the circulation: thus the bleeding orifice is left to contract. It is the same in a simple diarrhœa, the cause being only transitory and not repeated.* Although I have employed the instance of hemorrhage to illustrate that of diarrhœa, it is not my intention to speak of a wound as a disease: this is a disorganization. If there is anything about it of the character of disease (as a process), it is the reparative changes which are, however, not morbid, for these tend to decline the moment the local excitement is obviated. These remarks apply to all the morbid changes which surround a settled lesion, an aneurism, a foreign body, or a new growth. The latter is mostly to be regarded just as any other part of the body; sometimes it declines because its stimulus and nutrition fail through other correlating actions, at other times it grows for manifestly opposite reasons.

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* As a further illustration, I venture to introduce a merely physiological train of events. Excessive repletion induces successively

The phthisical patient is perfectly right when he says I am much better this week; and morbid anatomy proves that such cases do recover, as well as that others are repeatedly repairing. He says, I have taken cold again, my expectoration is returned; and he says truly. He has gradually become extremely susceptible of disturbance; the counterbalancing organs have become obstinately inert, and his physician has not learnt to help him rightly.

Let us patiently endeavour to find out the full extent of this last law, how nearly it may be universal. Let it not be idly imagined to be visionary because it does not seem universal; how remarkably does it apply to numerous

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activity in the right heart, the lungs, the left heart, and its distribution of blood, with the resulting excretions, &c. Finally, a subsidence of these functions may be traced in a similar order. Thus it may happen in diseases; and thus we see that the restorative actions are physiological. But we do not see where these actions cease before death occurs.

local diseases! all that can be said against it is, that the time must come in every man's life when after innumerable injuries the law seems to fail. The exceptions may be estimated as one to a thousand. Hence from the simple disturbance, other functions successively become affected. The explanation of the exception is this: The power or repetition, or persistence of the morbid causes is finally overwhelming, or the feebleness of the individual body or function renders it assailable fatally by the slightest disturbing causes. It is true that a disease may advance even to a fatal termination, without any very marked sign of mitigation, and yet in a similar case a venesection may give loose to a steady train of convalescent actions, or perhaps some unseen cause or unexpected change does this. Who has not seen or heard of the magic of calomel?

Every vital action is in a sense healthful, however great the morbid oppression, and even if death has invaded half the body; but I do not desire to overstrain the rule or to maintain that it is universal.

Of course, by disease it is not here intended to include disorganization: such as dead matter, a contracted passage, an indurated, hypertrophied, or wasted organ; and yet most of these cases as they are found in life are not wholly beyond the influence of the rule here maintained.

Fifthly. That a great number of diseases are in their essential character *variable* is not to be denied. Indeed, I attach more importance to this fact than to any conclusion I ever arrived at in the study of medicine. There will be no reason to divide the important distinction of *variable diseases* from that law (third), which declares the course of disease to be invariable, and always in exact proportion to the cause and constitution, if it shall be shown that variable diseases are equally definite, but depend only on variable causes; that they consist of a *succession* of diseases,—many repetitions of a disease. The truth of the law, that the course of disease is definite, &c., I suppose to be universal; the truth of the fourth—diseases tend to decline, &c., may possibly be no less so. Both these rules, however, need the illustration which is to be derived from the exposition of the fifth, for which I must premise that it is not intended to explain actual exceptions to the preceding laws, but that it forms in fact a separate though less general rule.

Were it not, however, for the sake of the precision afforded by separate consideration, I should have been disposed to state my view of the last three laws collectively: thus, various causes and conditions of the frame render the progress of many disorders irregular, and here as well as in uninterrupted recoveries, we observe the natural efforts tending to restoration; and in all these cases, and in every accession or repetition of disease, there is a degree of uniformity fixed and certain, with a due regard to the excitants and the recipient, as far at least as our knowledge of causes and constitution can justify any assumption at all.

I now for the present take my leave of this subject and of my reader, not without an interest in the comment he may make, although there is but one point on which I might wish to reply. If he should ask, what is the use of all this? I would refer him to the analysis at the head of the present chapter, for it seems to me impossible for any one fully to admit the truth of these positions, without the conviction that they must serve to indicate and establish the most just views of the application of remedies, the rules of habit, and the obviation of mischievous causes.

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